NEW YORK
state department of
HEALTH

Nirav R. Shah, M.D., M.P.H.
Commissioner

Sue Kelly
Executive Deputy Commissioner

September 11, 2013

Carmine F. Vasile

Personal Privacy/ Ex 6 home address

FOIL #: 13-08-239

Dear Dr. Vasile:

This letter responds to your Freedom of Information Law request of 8/13/2013, in which you requested "a list of conversion factors for both man-made & naturally occurring radionuclides-- including Radium-226/228 and their beta/photon-emitting daughters, which includes Lead-210." I have enclosed documents responsive to your request.

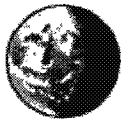
Should you feel that you have been unlawfully denied access to records, you may appeal such denial in writing within 30 days to the Records Access Appeals Officer, Division of Legal Affairs, Empire State Plaza, 2438 Corning Tower, Albany, New York, 12237-0026.

If you require additional information or wish to discuss this matter further, please do not hesitate to contact me at (518) 474-8734.

Sincerely,

Elizabeth A. Sullivan, Esq.
Records Access Office

EAS/hw



Carmine Vasile
<gfx-ch@msn.com>
08/13/2013 02:43 PM

To BOB-FOIL BML/BML/DOH@NYSDOH,

cc Ethan Irwin <et[Personal Privacy/ Ex 6 email], Anthony Sabino_Esq. <s[Personal Privacy/ Ex 6 email]t>, Mike Boutis_BWD <[Personal Privacy/ Ex 6 email]>, Stan Carey_Mass-Water

bcc

Subject FOIL Request for (pCi/4mrem) Conversion Factors

2 attachments


SOF-Example.pdf EPA CERCLA Directive no. 9283.1-14.pdf

Records Access Office
New York State Department of Health
foil@health.state.ny.us
(518) 474-8734

To whom it may concern: "***The Radionuclides in Drinking Water: A Small Entity Compliance Guide***" @ http://www.epa.gov/ogwdw/radionuclides/pdfs/guide_radionuclides_smallsystems_compliance.pdf has a Table on page 13 entitled "***Derived Concentrations (pCi/L) of Beta and Photon Emitters in Drinking Water Yielding a Dose of 4 mrem/yr to the Total Body or to any Critical Organ as defined in NBS Handbook 69***".

- **If only one radionuclide is present, the conversion factor equals the MCL; 200 pCi/L for Cs-137, for example.**

The Compliance Guide also indicates these conversion factors in (pCi/4mrem) are to be used by all states to compute fractions as discussed on pg. 11. If the sum-of-the-fractions exceeds 1, the sample exceeds the 4mrem MCL. These conversion factors are also to be used to evaluate radioactive groundwater destined to contaminate public, private & irrigation wells as discussed in the attached "***EPA CERCLA Directive no. 9283.1-14***".

The problem is that the table on Compliance Guide pg. 13 and Attachment B in the attached CERCLA Directive no. 9283.1-14 have conversion factors limited to 179 man-made radionuclides and exclude far more deadly, naturally occurring isotopes found in LI ground & tap-water; like Lead-210, Radium-226, Radium-228.

Since NY State needs them to perform Sum-of-the-Fractions (SOF) calculations like the one in the attached "***SOF-Example***", please provide a list of conversion factors for both man-made & naturally occurring radionuclides -- including Radium-226/228 and their beta/photon-emitting daughters, which includes Lead-210.

Yours truly,
Dr. Carmine F. Vasile

Personal Privacy/ Ex 6 home address and phone number

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EPA regulates 179 man-made beta and photon emitting radionuclides. The table you referenced includes conversion factors for those 179 man-made beta and photon emitting radionuclides in drinking water which yield a dose of 4 mrem per year. The table was prepared by EPA and is enclosed for your reference.

According to the Radionuclides Rule, the MCL of 4 mrem/year applies to only man-made beta and photon emitters. Please refer to 40 CFR 141.66(d) that reads *"MCL for beta particle and photon radioactivity.* (1) The average annual concentration of beta particle and photon radioactivity from **man-made radionuclides** in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year)."

NYSDOH and EPA do not have an equivalent table for naturally occurring beta and photon emitters. A radionuclides expert in the NYSDOH reviews all cases that are brought to our attention individually when naturally occurring beta emitting radionuclides are found in drinking water. However, you may derive such conversion factors using information in the National Bureau of Standards Handbook 69 which is available online at http://www.orau.org/ptp/Library/NBS/NBS%2069.pdf. You may find Federal Guidance Report No. 11 also useful to derive those conversion factors. The Guidance is also available online at http://www.epa.gov/radiation/docs/federal/520-1-88-020.pdf.

Please note that Radium-226 is an alpha particle emitter, and Radium-228 is a naturally occurring beta particle emitter. Therefore, the MCL of 4 mrem/year is not applied to these isotopes. However, they are regulated with the combined Radium-226/228 MCL of 5 pCi/L.

table_betaphotonemitters.pdf